

PATENT
Attorney Docket No. 05725.1242-00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Bertrand LION et al.) Group Art Unit: 1796
Application No.: 10/670,478) Examiner: H. PEZZUTO
Filed: September 26, 2003)
For: NOVEL BLOCK POLYMERS AND) Confirmation No.: 7403
COSMETIC COMPOSITIONS AND)
PROCESSES COMPRISING)
THEM)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

I, Bertrand LION, declare and state that:

1. I am a French citizen, residing at 10-12 rue de Fécamp, 75012 PARIS – FRANCE,
2. I have been awarded a degree in Chemistry (Master) from the University of Pierre et Marie Curie (Paris VI),
3. I have been employed by L'ORÉAL since 1989 and I am presently a senior researcher of the Advanced Research (Materials Sciences) at L'ORÉAL. During my employment at L'ORÉAL, I have been engaged in research and development regarding polymers (synthesis, processing, properties).
4. Given my education and experience, particularly in the area of polymers synthesis and properties, I consider myself able to provide the following testimony

based on experiments conducted by me or under my direct supervision.

TESTING

5. The polydispersity of the block polymer of Example 9 according to claimed invention ("Inventive Block Polymer") was compared to a Comparative Block Polymer.

6. The Inventive Block Polymer and the Comparative Block Polymer were comprised as listed in Table I:

TABLE I

	Inventive Block Polymer (% by weight)	Comparative Block Polymer (% by weight)
Composition	isobornyl methacrylate 35% isobornyl acrylate 35% isobutyl acrylate 30%	isobornyl methacrylate 29.2% isobornyl acrylate 29.2% isobutyl acrylate 41.6%

PROCEDURE

7. The Comparative and Inventive Block Polymers were prepared according to the following procedures:

Synthesis of the Comparative Block Polymer

8a. Synthesis of the First Block of the Comparative Block Polymer: 150 g of isobutyl acrylate, 0.220 ml of ethyl 2-bromo isobutyrate (initiator), and 0.313 ml of pentamethyldiethylene triamine (PMDETA) were introduced into a 1 liter reactor. The mixture was mixed under argon (inert gas) for 10 minutes, and then 215 mg of CuBr (catalyst) were added. The temperature of the reactor was increased to 90°C (oil bath). After 6 hours, the reaction was stopped. The solution was put into 4 liters of a mixture

of water/ethanol (50/50), and the polymer forming the first block was precipitated. The polymer was then washed with the water/ethanol (50/50) mixture. The water/ethanol solution was removed and the polymer was obtained (solid form) and dissolved in tetrahydrofuran (THF).

8b. The solution was then filtered on alumina (Al_2O_3) and a yellow solution was obtained from which the THF was removed by evaporation. The polymer was a homopolymer of isobutyl polyacrylate with a molecular weight of 40,000.

9. **Synthesis of the Second Block of the Comparative Block Polymer (and the final block):** 9.6 g of the first block polymer were dissolved in 32.5 ml of butyl acetate in a 1 liter reactor. 20 g of isobornyl acrylate, 20 g of isobornyl methacrylate, and 0.048 ml of PMDETA were added. The mixture was mixed under argon (inert gas) for 10 minutes, and then 33 g of CuBr (catalyst) were added. The temperature of the reactor was increased to 90°C (oil bath). After 52 hours, the reaction was stopped. The solution was put into 4 liters of a mixture of water/ethanol (50/50), and the polymer forming the second block was precipitated. The polymer was then washed with the water/ethanol (50/50) mixture. The water/ethanol solution was removed and the polymer was obtained (solid form) and dissolved in THF. The solution was then filtered on alumina (Al_2O_3) and then on a paper filter. A polymer in solid form was obtained (yellow powder) and dried.

Synthesis of the Inventive Block Polymer

10. The Inventive Block Polymer was made according to the procedure set forth in Example 9 of the instant Application No. 10/670,478. That is, the first block polymer was not purified before the synthesis of the rest of the block polymer.

RESULTS

11. The Comparative Block Polymer, (isobutyl polyacrylate)-b-poly(isobornyl acrylate-co-isobornyl methacrylate), contained 58.4% of a first block polymer (mixture of isobornyl methacrylate and isobornyl acrylate) with a Tg of 102°C and 41.6% of a second block polymer (isobutyl acrylate) with a Tg of -24°C.

12. The Inventive Block Polymer contained 70% of a first block polymer (mixture of isobornyl methacrylate and isobornyl acrylate) with a Tg of 102°C and 30% of a second block polymer (isobutyl acrylate) with a Tg of -24°C.

13. The Inventive Block Polymer and the Comparative Block Polymer had the following physical characteristics, as shown in Table II:

TABLE II

	Inventive Block Polymer	Comparative Block Polymer
Solubility	Soluble at 50% by weight in isododecane (at 25°C)	Soluble at 50% by weight in isododecane (at 25°C)
Viscosity (50% dry extract 25°C)	30,000 centipoise	100,000 centipoise
Mw	151,000	113,800
Polydispersity Index	3.6	1.3

CONCLUSION

14. The results of this testing illustrate that the Comparative Block Polymer is different in structure from the Inventive Block Polymer. Specifically, based on the different synthetic steps used to make the Comparative Block Polymer and the Inventive Block Polymer, the Comparative Block Polymer is a diblock polymer lacking an intermediate block as claimed, whereas the Inventive Block Polymer has an

intermediate block a claimed.

15. The results further demonstrate that the structure of the block polymer (i.e., with or without an intermediate block a claimed) is related to the polydispersity index, resulting in a low I_p for a "real" block without an intermediate block (Comparative Block Polymer) compared with a higher I_p for a polymer with an intermediate block as claimed (Inventive Block Polymer).

16. Finally, the results demonstrate that the structure of the polymer (i.e., with or without an intermediate block as claimed) is also related to the viscosity.

17. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: September 17, 2008 By: Bertrand LION
Bertrand LION